

## WHAT IS CLAIMED IS:

1. A method for preventing or minimizing loss of bone mineral in mammals which method comprises  
5 administering to a mammal an amount of an aminoalkylenephosphonate or a pharmaceutically acceptable salt thereof which is effective to prevent or minimize loss of bone mineral density.
- 10 2. The method according to Claim 1 wherein said aminoalkylenephosphonate has at least one  $R-N(Alk-PO_3H_2)_2$  group wherein R can be an aliphatic or cyclic moiety, and Alk is an alkylene group having from 1 to 4 carbon atoms.
- 15 3. The method according to Claim 1 wherein said aminoalkylenephosphonate has at least two  $RR'N-Alk-PO_3H_2$  groups wherein R and R' can be, same or different, aliphatic or cyclic moiety, and Alk is an alkylene group having from 1 to 4 carbon atoms.
- 20 4. The method according to Claim 2 or Claim 3 wherein the amine moiety of the aminoalkylenephosphonate represented by the  $R-N=$  and  $RR'N-$  in the  $R-N(Alk-PO_3H_2)_2$  and  $RR'N-Alk-PO_3H_2$  groups is derived from either an  
25 aliphatic or a cyclic polyamine in which hydrogen atoms bonded to the nitrogen atoms in the amine moiety are partially or completely substituted by an alkylphosphonate group.
- 30 5. The method according to Claim 1 wherein said aminoalkylenephosphonate is an aminomethylenephosphonate.
- 35 6. The method according to Claim 1 wherein said aminoalkylenephosphonate is 3,6,9,15-tetraazabicyclo[9.3.1]tetradeca-1(15),11,13-triene-3,6,9-trimethylenephosphonic acid (PCTMP).

7. The method according to Claim 1 wherein said aminoalkylenephosphonate is 1,4,7,10-tetraazacyclododecane-1,4,7,10-tetramethylenephosphonic acid (DOTMP).

8. The method according to Claim 1 wherein said aminoalkylenephosphonate is N,N'-bis(methylenephosphonic acid)-2,11-diaza[3.3](2,6)pyridinophane (BP2MP).

9. The method according to Claim 1 wherein said aminoalkylenephosphonate is N,N-bis(methylenephosphonic acid)-2-(aminomethyl)pyridine (AMPDMP).

10. The use of an aminoalkylenephosphonate or a pharmaceutically acceptable salt thereof in the manufacture of a pharmaceutical formulation for preventing or minimizing loss of bone mineral in mammals.

11. The use of an aminoalkylenephosphonate or a pharmaceutically acceptable salt thereof according to Claim 10 wherein said aminoalkylenephosphonate has at least one R-N(Alk-PO<sub>3</sub>H<sub>2</sub>)<sub>2</sub> group wherein R can be an aliphatic or cyclic moiety, and Alk is an alkylene group having from 1 to 4 carbon atoms.

12. The use of an aminoalkylenephosphonate or a pharmaceutically acceptable salt thereof according to Claim 10 wherein said aminoalkylenephosphonate has at least two RR'N-Alk-PO<sub>3</sub>H<sub>2</sub> groups wherein R and R' can be, same or different, aliphatic or cyclic moiety, and Alk is an alkylene group having from 1 to 4 carbon atoms.

13. The use of an aminoalkylenephosphonate or a pharmaceutically acceptable salt thereof according to Claim 11 or Claim 12 wherein the amine moiety of the

aminoalkylenephosphonate represented by the R-N= and RR'N-  
in the R-N(Alk-PO<sub>3</sub>H<sub>2</sub>)<sub>2</sub> and RR'N-Alk-PO<sub>3</sub>H<sub>2</sub> groups is derived  
from either an aliphatic or a cyclic polyamine in which  
hydrogen atoms bonded to the nitrogen atoms in the amine  
moiety are partially or completely substituted by an  
alkylphosphonate group.

14. The use of an aminoalkylenephosphonate or a  
pharmaceutically acceptable salt thereof according to  
Claim 10 wherein said aminoalkylenephosphonate is an  
aminomethylenephosphonate.

15. The use of an aminoalkylenephosphonate or a  
pharmaceutically acceptable salt thereof according to  
Claim 10 wherein said aminoalkylenephosphonate is  
3,6,9,15-tetraazabicyclo[9.3.1]tetradeca-1(15),11,13-  
triene-3,6,9-trimethylenephosphonic acid (PCTMP).

16. The use of an aminoalkylenephosphonate or a  
pharmaceutically acceptable salt thereof according to  
Claim 10 wherein said aminoalkylenephosphonate is  
1,4,7,10-tetraazacyclododecane-1,4,7,10-  
tetramethylenephosphonic acid (DOTMP).

17. The use of an aminoalkylenephosphonate or a  
pharmaceutically acceptable salt thereof according to  
Claim 10 wherein said aminoalkylenephosphonate is N,N'-  
bis(methylenephosphonic acid)-2,11-  
diazabicyclo[3.3.1]octa-2,6-diazepine (BP2MP).

18. The use of an aminoalkylenephosphonate or a  
pharmaceutically acceptable salt thereof according to  
Claim 10 wherein said aminoalkylenephosphonate is N,N-  
bis(methylenephosphonic acid)-2-(aminomethyl)pyridine  
(AMPDMP).